



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,176	12/09/2003	Paul J. Sidenblad	NVDA P000859	4860
26291 7590 05/01/2007 PATTERSON & SHERIDAN L.L.P. 595 SHREWSBURY AVE, STE 100 FIRST FLOOR SHREWSBURY, NJ 07702			EXAMINER RIZK, SAMIR WADIE	
			ART UNIT 2112	PAPER NUMBER
			MAIL DATE 05/01/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/731,176

Applicant(s)

SIDENBLAD ET AL.

Examiner

Sam Rizk

Art Unit

2112

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,9,10,13-19,22,23 and 26-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,9,10,13-19,22,23,26-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>2/19/2007</u> . | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 2112

DETAILED ACTION

- Response to the applicant's amendment dated 3/2/2007
- Claims 2,7,8,11,12,24, and 25 have been cancelled
- Amended claims 1,6,9,10,13-19,22,23 have been submitted for examination
- Added new claims 26-34 have been submitted for examination
- Claims 1,6,9,10,13-19,22,23 and 26-34 have been rejected

Response to Arguments

1. Applicant's arguments with respect to claims 1,13 17 and 22 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Amended claims 1,6,9,10,13,17,22, and 26-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Blightman et al. US patent no. 7185266 (Hereinafter Blightman).
3. In regard to claim 1, Blightman teaches:
(Currently Amended): A method of processing inbound and outbound frames using an offload unit (Note: FIG. 11, reference character (162) in Blightman) and a delegated connection table (Note: FIG. 11, reference character (214) in Blightman), comprising:
initializing an entry in the delegated connection table with connection state data including a connection table index corresponding to a connection selected by a TCP stack executed by a host CPU for processing by the offload unit:
(Note: col. 12, lines (47-50) and col. 15, lines (45-62) in Blightman)
receiving the delegated connection table index at the offload engine, which is coupled to the host CPU;
(Note: FIG. 14, reference character (432), (408), (412), (413) and (170) in Blightman)
receiving a prototype header and data for transmission from the TCP stack;
(Note: FIG. 12, reference character (242) in Blightman)
accessing the delegated connection table entry using the delegated connection table index;

(Note: FIG. 15, reference characters (500) & (501) and col. 19, lines (15-20) in Blightman)

computing a TCP checksum based on a portion of the data for transmission; and

(Note: FIG. 7, reference character (134) in Blightman)

outputting a frame including that includes the TCP checksum and the portion of the data for transmission.

(Note: FIG. 1, reference character (140) in Blightman)

4. In regard to claim 3, Blightman teaches:

(Original): The method of claim 1, wherein the frame includes a received data acknowledgement number.

(Note: col. 12, lines (45-50) in Blightman)

5. In regard to claim 4, Blightman teaches:

(Original): The method of claim 3, wherein the received data acknowledgement number is obtained from the delegated connection table entry.

(Note: col. 19, lines (30-55) in Blightman)

6. In regard to claim 5, Blightman teaches:

(Original): The method of claim 3, wherein the received data acknowledgement number is updated when a data is received from the destination.

(Note: col. 16, lines (17-36) in Blightman)

7. In regard to claim 6, Blightman teaches:

(Currently Amended): The method of claim 1, wherein the frame includes a TCP timestamp, and the TCP timestamp is stored in the delegated connection table entry and is updated when data is received from a destination connection.
(Note: col. 2, lines 41-53) in Blightman)

8. In regard to claim 9, Blightman teaches:

(Original): The method of claim 1, further comprising computing an IPv4 header checksum when a delegated connection is an IPv4-based connection.
(Note: col. 2, line 47 in Blightman)

9. In regard to claim 10, Blightman teaches:

(Original): The method of claim 1, further comprising:
accessing the connection table entry;
computing a TCP checksum based on another portion of the data for transmission; and
outputting an additional frame including the TCP checksum and the other portion of the data for transmission.

(Note: FIG. 7, reference character (134) "1st PATH" CRC calculation step in Blightman)

10. In regard to claim 13, Blightman teaches:

initializing an entry in the delegated connection table with connection stat data including a connection table index corresponding to a connection selected by a TCP stack executed by a host CPU for processing by the offload unit;

(Note: col. 12, lines (47-50) and col. 15, lines (45-62) in Blightman)

receiving an inbound TCP frame from a destination connection;

(Note: FIG. 7, reference character (131) in Blightman)

determining that the destination connection is a connection delegated for processing by the offload unit;

(Note: FIG. 7, reference character (133) in Blightman)

determining whether a sequence number in the TCP frame is consecutive relative to a sequence number stored in a delegated connection table;

(Note: FIG. 7, reference character (133) in Blightman)

processing the inbound frame at the offload unit if the sequence number is consecutive and uploading the inbound frame to the host CPU for processing if the sequence number is not consecutive; and

(Note: FIG. 7, "1st PATH" and "2nd PATH" and FIG. 11 "HOST" and "INIC" in Blightman)

updating the sequence number stored in the delegated connection table.

(Note: col. 19, lines (30-55) in Blightman)

11. Claims 17 and 22 are rejected for the same reasons as per claim 1.

12. In regard to claim 26, Blightman teaches:

(New): The method of claim 1 wherein connections that are not delegated to the offload unit or that require special processing are processed by the TCP stack; and

the offload unit may request legacy processing of one of the delegated

connections by the TCP stack so that outgoing frames are transmitted by either the TCP stack or the offload connection.

(Note: col. 11, lines (57-67) in Blightman)

13. In regard to claim 27, Blightman teaches:

(New): The method of claim 26 wherein a system memory is coupled to both the host CPU and the offload unit, and including the step of storing connection data for all active connections including those processed at the offload unit and the TCP stack at the host CPU at a connection table in the system memory.

(Note: FIG. 10, reference character (186) in Blightman)

14. Claim 28 is rejected for the same reasons as per claim 26.

15. In regard to claim 29, Blightman teaches:

(New): The method of claim 26 including the step of determining the validity of an incoming frame and uploading an invalid frame to the TCP stack for legacy processing.

(Note: FIG. 7, reference character (132) in Blightman)

16. In regard to claim 30, Blightman teaches:

(New): The method of claim 27 including the step of processing a valid frame at the offload unit and loading the processed frame directly to the system memory associated with the connection table.

(Note: FIG. 12 flow chart in Blightman)

17. In regard to claim 31, Blightman teaches:

(New): The method of claim 30 wherein a valid frame is partially processed at the offload unit when user buffer space associated with the offload unit is available, the valid frame being transferred to the TCP stack for legacy processing when user buffer space is not available.

(Note: FIG. 12 flow chart in Blightman)

18. In regard to claim 32, Blightman teaches:

(New): The method of claim 31, wherein a portion of the valid frame processed at the offload unit is limited by a startup limit stored at the delegated connection table.

(Note: FIG. 12 flow chart in Blightman)

19. In regard to claim 33, Blightman teaches:

(New): The method of claim 30, wherein each incoming frame includes an acknowledgement (ACK), the offload unit coalescing a plurality of the ACK's before notifying the TCP stack of the status of the delegated connection associated with each received ACK.

(Note: FIG. 12 flow chart in Blightman)

20. In regard to claim 34, Blightman teaches:

(New): The method of claim 1, wherein the offload unit compares a sequence number (SN) in each of the incoming frames with a SN stored in the delegated connection table; and
if not equal then the entire frame is uploaded for legacy processing by the TCP stack.

(Note: Fig. 12, reference character (246) in Blightman)

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
 2. Ascertaining the differences between the prior art and the claims at issue.
 3. Resolving the level of ordinary skill in the pertinent art.
 4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
21. Claims 14-16, 18, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blightman as applied to claim 13 above, and further in view of Melpignano et al. US patent no. 7058083 (Hereinafter Melpignano).
22. In regard to claim 14, Blightman teaches substantially all the limitations in claim 13.

However, Blightman does not teach:

The method of claim 13, further comprising:

determining that the received sequence number is greater than a threshold; and transmitting a receive data acknowledgement to the destination.

Melpignano in an analogous art that teaches network interface driver for communication of TCP packets teaches:

The method of claim 13, further comprising:

determining that the received sequence number is greater than a threshold; and transmitting a receive data acknowledgement to the destination.

(Note: col. 3, lines (18-30) in Melpignano)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Melpignano that comprise determining that the received sequence number is greater than a threshold; and transmitting a receive data acknowledgement to the destination with teaching of Blightman.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need in providing an improved quality of TCP/IP connection in environments where poor link quality degrade performance.

23. In regard to claim 15, Melpignano teaches:

(Currently Amended): The method of claim 13, further comprising:

determining that a timer has expired; and

transmitting a receive data acknowledgement to the destination.

(Note: col. 3, lines (55067) through col. 4, lines (1-15) in Melpignano)

24. In regard to claim 16, Melpignano teaches:

(Currently Amended): The method of claim 13, further comprising:
determining that a count of unacknowledged received frames is greater than a
limit; and
transmitting a receive data acknowledgement to the destination.

(Note: col. 3, lines (18-30) in Melpignano)

25. In regard to claim 18, Melpignano teaches:

(Original): The method of claim 17, further comprising:
outputting a notification to the application program responsive to the notification
flag value; and
updating at least a portion of the connection state data.

(Note Fig. 2, reference character (58) in Melpignano)

26. Claim 19 is rejected for the same reasons as per claim 14.

27. Claim 23 is rejected for the same reasons as per claim 13.

Conclusion

28. The prior art made of record and not relied upon is considered pertinent to
applicant's disclosure.

- Craft et al. US publication no. 2006/0075130 teaches protocol stack
that offloads a TCP connection from a host computer to a network
interface device.

Art Unit: 2112

- Philbrick et al. US publication no. 2002/0095519 teaches TCP/IP offload device with fast path TCP ACK generation and transmitting mechanism.
- Chu et al. US publication no. 2004/0095883 teaches method and system for TCP large segment offload with ACK based transmit scheduling.
- Borella et al. US patent no. 6643259 teaches method for optimizing data transfer in a data network.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Art Unit: 2112

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

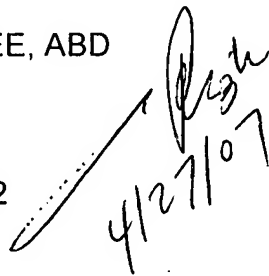
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jacques Louis-Jacques can be reached on (571) 272-6962. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

ART UNIT 2112

4/27/07



GUY LAMARRE
PRIMARY EXAMINER